

## Field Machining Center – Helping to keep projects on time and on budget



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### The challenge – plant turnaround schedules

**T**here has always been a tremendous demand for machinists and machining capability at job sites during plant turnarounds. The most opportune time to retrofit a machine with transducers is when the plant is experiencing an outage for maintenance or inspection. However, that is when machinists and machining capability are hard to obtain. Retrofitting machines with transducers generates an even greater need for skilled machinists. They must fabricate probe brackets, perform bearing and bearing housing modifications, and provide the other precision machining and welding tasks required to properly install instrumentation.

Quick turnaround is essential because each day of lost production can equal hundreds of thousands, or even millions, of dollars in lost revenue. Consequently, plant outages are generally accompanied by very aggressive schedules, which put a strain on resources such as personnel, equipment, and facilities. The plant's machine shop and its machinists are no exception. In many cases, the machine shop becomes a "bottleneck" during a plant turnaround because the machinists and tools are in such high demand.

At Bently Nevada, we have participated in thousands of plant turnarounds over the years, and we understand the importance of adapting our service schedules to our customers' outage schedules. The specialized nature of transducer application design and the job of specifying bearing penetrations are exacting. These precision machining tasks leave no room for error. You simply don't get multiple chances; mistakes mean costly parts have to be scrapped and

outage time increases. This experience has taught us that readily available access to on-site, precision machining capabilities is often the single biggest determinant in achieving a plant's turnaround schedule and budget when Bently Nevada transducers are being installed.

### The answer – Bently Nevada's Mobile Field Machining Center

For many years, Bently Nevada's service group knew the key to a less stressful and more efficient transducer retrofit project was to provide our own, dedicated machining center right at the job site. In 1990 this became a reality. The Field Machining Center (FMC) is a 2.4 m by 12 m (8 ft by 40 ft), self-contained, *mobile* machine shop. After the FMC is trucked to the job site and connected to external power, it is quickly ready for service.

The machine shop has a full complement of equipment, including a vertical mill, magnetic base and radial arm drills, a TIG welder, vertical band saw, grinder/chop saw, 6' lathe, and a portable key mill (for providing once-per-turn Keyphasor® notches on shafts). An air compressor and bead-blasting cabinet ensure parts are clean and ready for installation. The tooling and fixtures within the FMC are a specialized assortment, based on years of experience installing proximity transducers, temperature sensors,



**Bently Nevada's Field Machining Center.**



**Interior of Field Machining Center.**

case-mounted vibration transducers, LVDTs, pressure transducers, and other machine condition and process measuring instruments.

On-site changes to machine components can immediately be conveyed to the machine shop staff through design drawings, avoiding delays and expensive misunderstandings. Locating the machine shop on-site also reduces the cost and risk associated with transporting key machine components to an off-site facility for machining.

In addition to transducer installation and design, Bently Nevada's highly-trained team of service specialists, machinists, and site supervisors are available to help you with the installation of your entire machinery protection and management system. Our experienced teams also install monitors, communication processors, process control system interfaces, conduit and wiring runs, monitoring equipment cabinets, diagnostic workstations, network connections – everything. While our teams focus on the machinery protection and management system, your plant staff and other contractors can spend their valuable time on other aspects of the turnaround where their specialized skills are most valuable.

### **The proof – the FMC on the job**

Though our FMC has proven to be an asset in many situations, one recent application stands out. The site was a gas transmission station at a remote gas field, located three hours from the closest machine shop. After one week on-site, our contracted work was well underway. We then discovered that we could also help our customer by providing some of the other precision machining and welding expertise required for

the repair and re-assembly of the machine train. The remote location of the plant made it extremely cost-effective to use the FMC. In most cases, we could provide what was needed in less time than it took to make the trip to the city and back. Eliminating transportation problems also meant better control of parts and scheduling. The additional welding, machining, and fabrication services we provided reduced the actual installa-

tion time and helped our customer complete the necessary maintenance work in less time than would otherwise have been required.

The Bently Nevada FMC has been in constant use for the past 14 months and is booked with jobs through the first quarter of 2000. Our service teams subcontract additional FMC capacity, as demand requires.

The Field Machining Center is just one cost-saving offering Bently Nevada Corporation's North American Services organization has available. Skilled specialists will detail and coordinate your project, whether it's a one-day, on-site calibration visit or a multi-phase project spanning several years. Our machinery protection and management systems come fully supported, from schedule definition to the first turn of the lathe, to the completion of a project, on time and on budget. Contact your nearest Bently Nevada sales professional to learn how our full project coordination and execution capability can benefit you. 